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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/667,045	09/21/2000	Yifan Gong	TI-29417	8420

7590 04/06/2005

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EXAMINER	
LERNER, MARTIN	

ART UNIT	PAPER NUMBER
2654	

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/667,045	GONG ET AL.	
	Examiner	Art Unit	
	Martin Lerner	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4 to 9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *5 and 6* is/are allowed.

6)☒ Claim(s) *4 and 7 to 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7 to 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7, and claims 8 and 9 dependent thereon, depend upon cancelled independent claim 1. Claims 7 to 9 should depend upon pending independent claims 4 or 5.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Anderson et al.* in view of *Nakamura*.

Regarding independent claim 4, *Anderson et al.* discloses a speech activity detector comprising:

"a frame-level detector for making speech/non-speech decisions for each frame" – speech detector 205 provides an initial estimate of the presence of speech in the current frame; speech detector 205 generates an output signal when it is determined based on a plurality of statistics that speech is strongly present in a time frame and generates a second output sign when it is initially estimated that speech is present in a time frame (column 6, lines 40 to 50: Figure 5); otherwise, only background noise ("non-speech") is present;

"an utterance detector coupled to said frame-level detector and responsive to said speech/non-speech decisions over a period of frames to detect an utterance" – the initial estimate is then smoothed against previous frames and presented to the state machine 260; state machine 260 receives as input the first and second output signals from the speech detector 205; the state machine 260 provides context and memory for interpreting the speech detector output; the state machine 260 outputs a speech activity status signal based on the state of the state machine 260 (column 6, lines 46 to 67: Figure 5); state machine 260 makes a final decision as to whether and what type of speech is present based on the state of state machine 260 for previous frames (column 10, lines 1 to 41: Figure 6; Table 1).

Anderson et al. discloses a voice activity detector (VAD) determining the noise in an input signal from power spectral densities (PSDs) of speech and noise with a Wiener filter. (Column 4, Line 21 to Column 5, Line 55) However, *Anderson et al.* does not say a frame-level speech/non-speech decision is determined from an autocorrelation. *Nakamura* teaches a voice presence/absence discriminator, wherein an n-th degree

autocorrelation coefficient Rn is calculated as a measure of the signal energy. The n-th degree reflection coefficient rn corresponds to a value obtained by normalizing the n-th degree autocorrelation coefficient Rn. The first degree autocorrelation coefficient R1 exhibits a value that is similar to the total energy R0. (Column 5, Lines 15 to 51: Equations (1) and (2)) Subsequently, the first and second reflection coefficients r1 and r2 are input to the voice presence/absence discriminator 14, and a voice presence determination section 28 determines the voice presence or absence of the frame based on the frame maximum power and the first and second reflection coefficients. (Column 8, Lines 14 to 22; Column 9, Lines 11 to 15) Thus, *Nakamura* suggests that a frame-based voice presence/absence determination is performed based upon reflection coefficients r1 and r2, which are known to those skilled in the art to be derived from autocorrelation coefficients R1 and R2. Also, autocorrelation coefficients provide a measure of frame energy. *Nakamura* provides for discrimination between the presence and absence of voice in a frame that rarely performs erroneous discriminations in bad environments where the background noise level is high. (Column 2, Lines 25 to 33) It would have been obvious to one having ordinary skill in the art to utilize an autocorrelation function to provide reflection coefficients for voice presence/absence discrimination as suggested by *Nakamura* in the frame-level voice activity detector of *Anderson et al.* for the purpose of reducing erroneous discriminations in bad environments where the background noise level is high.

Allowable Subject Matter

5. Claims 5 and 6 allowed.

Response to Arguments

6. Applicants' arguments filed 09 July 2004 have been considered but are moot in view of the new grounds of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (703) 308-9064. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ML
3/30/05

Martin Lerner
Examiner
Art Unit 2654